



Saskatchewan Forage Council

Why direct seed forages?

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Direct seeding reduces the spring seeding operation to one pass, which saves time and reduces the cost of forage establishment. It provides a firm seedbed for the placement of forage seeds to a uniform shallow seeding depth. If annual weeds and straw residue are managed well before seeding, forage crop establishment becomes a simplified system where standing stubble prevents soil erosion, drying of the soil surface, and sandblasting of young seedlings as they emerge. In addition, direct seeding reduces soil disturbance thereby reducing weed seedling emergence and subsequent pressure on the forage seedlings.

Spring and late fall (just prior to freeze up) are the best times to seed perennial forage crops. Generally, perennial legume crops require more time than grasses to build root reserves and should not be seeded after July.

During establishment, a cover crop may provide some protection to newly emerging seedlings. However, cover crops generally require the extra input of time, add additional costs and require increased labour input to establish. The cover crop may provide some measure of weed suppression but also uses up valuable moisture. This can be particularly important in a dry year or in areas where surface water is scarce, particularly in the drier soil zones. However, a recent study conducted by Dr. Paul Jefferson (Agriculture and Agri-Food Canada–Swift Current), Gordon Pearse (Newfield Seeds–Nipawin), and Randy Pastl (–Saskatchewan Forage Council–Saskatoon) indicated that forage cover crop yield reduction effects on the subsequent forage yield is moisture dependent, cover-crop species dependent and increases as you move from the black/gray wooded soil/climatic zone to the brown soil/climatic zone. Other research has shown there may be a forage yield reduction for up to 2 years as a result of using a cover crop. When determining which course of action is the best for you, pencil out the numbers before seeding. Also, keep in mind that a cover crop can increase the chance of failure in a dry year. Consider that if you feel you can afford to summer fallow to produce a higher grain yield next year, you should be able to afford **not** to use a cover crop.

If you feel a cover crop fits into your plans, consider using the cover crop as a green feed. Make sure that you harvest the crop as soon as possible and try to avoid having the swath lay on the field for an extended period of time. Consideration should be given to timing of cover crop removal and subsequent effect on the forage stand. July can be very hot and dry, which is ideal for forage harvesting, but can expose the young seedlings that have been shaded by the cover

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crop to a harsh environment. Some producers find that seedlings will burn off and die after the cover crop has been removed. Consider increasing the seeding rate by 5 to 10% to compensate for this. The cover crop should be sown at a reduced rate to avoid excessive competition with the forage seedlings. Cover crops like barley or oat can be very competitive and you may have to reduce the cover crop seeding rate by $\frac{1}{2}$ to $\frac{2}{3}$ the normal rate. Separate seeding passes at right angles will help to reduce competition. Make sure perennial forage seed is not seeded more than $\frac{1}{2}$ inch deep. □

Undisturbed stubble provides a firm seedbed that is required for good seed to soil contact and subsequent germination. It is best to make sure the chaff and straw residue have been well managed in the spring or fall before seeding. One method is to bale the straw in the fall and/or use a chaff collector at harvest on the field intended for forage establishment. Poor residue management leads to hair-pinning (a situation where the coulter does not quite cut through the straw and the seed is left stranded in the groove without good soil/seed contact). It can also lead to blocking of the shanks on air-seeders resulting in total frustration. Poor residue management leads to poor forage establishment in the swath zone, and extreme weed pressures in the chaff zone.

Pre-seeding burn off with glyphosate should be seriously considered before proceeding with your forage seeding operation. This can be accomplished in the prior season during your pre-harvest weed manage program, or by delaying seeding until late May. Depending on moisture, temperature, year-to-year variations and location, 70% of your cool season weedy species will have germinated. However, warm season weedy species such as redroot pigweed may have to be controlled by mowing or an application of the appropriate herbicide. Once the majority of the weedy species are about 3 to 6 inches tall, spray with 1 litre/acre of glyphosate, wait for a few days and then go in and direct seed the forage crop. Fall applications of glyphosate are very effective for long-term control of perennial weeds. If the land is extremely weedy, particularly with perennial weeds, consider delaying seeding for a year to get these weeds under control. Weed control can be tricky with forages, particularly if establishing a forage mix with legumes. For this reason, it is even more important to have the weeds under control before seeding. In many cases, weed problems like dandelion are an indicator of poor soil fertility, particularly if soil moisture is considered adequate for your area.

For chemical weed control options in your forage stand, please consult the "Guide to Crop Protection" published each year by Saskatchewan Agriculture, Food, and Rural Revitalization (SAFRR). This publication is available at your local SAFRR extension office. As always, consideration should be given to the rotation of the various herbicide groups when possible to prevent the selection of herbicide resistant weedy species. Make sure you read the label carefully and are aware of any grazing or use restrictions that apply to the product you are considering. Once again, forage mixtures will limit the number of herbicide products available for use. If you have done things well and the weather has cooperated, annual weeds should only be a concern in the year of seeding. Without subsequent soil distribution, most annual weeds will remain dormant in the soil, becoming less viable as the years pass, with the net result of a lower viable weed seed bank once the forage stand is removed.

Improper seeding depth is probably the most common cause of a forage stand failure. A useful “Rule of Thumb” is if you **cannot** see about 5% of the seed on the soil surface then you are seeding too deep. Other sources suggest that the seeding depth in clay soil should not exceed $\frac{3}{4}$ of an inch; 1 inch into loam soils and $1\frac{1}{4}$ inch into sandy soil. Broadcasting and harrowing in forage seed should be avoided if possible, however, it is a better method than using equipment that results in seeding too deep. Depth control bands on disc drills will prevent the discs from sinking too deep into the ground. After you have started to seed, stop and check the depth several times to ensure the seed is being placed at the correct depth. It is better to seed shallow and wait for rain than it is to try to seed to moisture.

Zero-till disc drills are very good forage seeding tools. They generally have very good depth control and disturb a minimal amount of soil. One disadvantage is there is a potential for hair pinning if straw residue is not properly managed prior to seeding. Hoe drills are generally better in high residue situations, but depth control may be more of a concern. Air drills have on-row packing that creates a gully that catches moisture, provides additional protection to the seedling when it is first emerging and ensures a uniform thickness of soil above the seed. This results in a uniform looking field during emergence.

Air seeders with sweeps should not be used because of the variability in seeding depth and the large amount of soil disturbance that results, potentially creating a weed problem and increasing the potential for soil erosion. Air drills are convenient to use if a carrier will be mixed with the seed. Most air drills have a loading auger that can mix the seed and carrier. Regardless of the seeding tool used, agitation of the seed is very important to allow uniform flow of the seed through to the openers. Contact Prairie Agricultural Machinery Institute (PAMI) in Humboldt for more information on agitators for air tanks.

Fertilization of tame forage crops is recommended and soil tests should be conducted prior to seeding to determine nutrient levels. Legumes require similar fertility regimes as those for a canola crop. Grasses should be fertilized as if you were seeding a wheat or barley crop. Prior to seeding, make sure phosphate levels in the soil are sufficient to supply the forage crop for a number of years. Phosphate movement within the soil profile is very slow. If the phosphate is broadcast on the soil surface after forage establishment, it may take several years to become available for forage crop utilization. Once the forage crop is established, consider using a coulter banding fertilizer applicator for the addition of nutrients into the soil profile to promote forage stand longevity. If the seed and phosphate are mixed 1:1 by volume there will be no harmful effect on the seed, and the increased fertilizer will help to pop the seed out of the ground resulting in faster forage crop establishment.

For more information, contact the Saskatchewan Forage Council at (306) 966-8663.